Alalcomenaeus

Alalcomenaeus is one of the most widespread and longest-surviving arthropod genera of the Early and Middle Cambrian.[1] Known from over 300 specimens in the Burgess Shale, and the Chengjiang, it bears great similarity to the opabiniids.[2]

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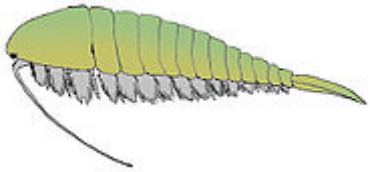
Alalcomenaeus

Temporal range:

Cambrian Stage 3–Mid Cambrian

Pre€ € O S D C P T J K PgN



Specimen of Alalcomenaeus cambricus on display at the Royal Ontario Museum, Toronto

Scientific classification

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	†Megacheira
Family:	†Alalcomeneidae Simonetta 1970
Genus:	†*Alalcomenaeus*
Species:	†***A. cambricus***

Binomial name

†***Alalcomenaeus cambricus***
Simonetta 1970

Morphology

Alalcomenaeus had three median eyes; two stalked, more lateral eyes; a triflagellate great appendage; and two more head appendages posterior to that. Like its body appendages, these were biramous—their inner branch was spiny, segmented, flexible and leg-like, while the outer portion had a large surface area and resembled a flap.

Alalcomenaeus reached about 6 cm in length, although many smaller specimens are known.[1] Its head was covered with a shield, and its eleven body segments were also covered with an exoskeleton. Its body terminated with a paddle-like telson ("tail") which probably helped to propel the organism; this ended with long flat spikes in the plane of the tail fin.[1]

Ecology

The organism probably swam, wafting its outer flap-limbs in waves along its body to gain propulsion, in the manner of *Anomalocaris*.[1] Its inner limb branches do not appear to be optimised for walking, although it is possible they helped the organism move along the sea floor.[1] A variety of other functions have been suggested, such as clinging to algal fronds; they seem best suited to grabbing onto, and tearing up, other animals, suggesting that the organism was probably a scavenger.[1] However, its large eyes and the long

flagella on its great appendages, combined with its large feeding apparatus and the spines on its inner limb branches, are more consistent with a predatory lifestyle, and the most recent interpretation has it feeding on organisms that lived on or in the surface of the sea floor.[1]

Affinity

Alalcomenaeus was initially thought to fall in the stem group to the crustacea, and was placed in a clade with *Leanchoilia*, *Actaeus* and *Yohoia*.[1] It has more recently been placed with the Opabiniids, mainly on the basis of its great appendage.[1] More up to date analyses place it along with *Leanchoilia* and *Yohoia* as well as *Sanctacaris*, *Habelia*, *Sarotrocercus* and *Sidneyia*, somewhere within the arachnomorpha. The closeness of *Sanctacaris* and *Leanchoilia* has been supported by subsequent work,[3] and *Actaeus* is often excluded from such works as it is poorly understood.[1] The recently described *Dicranocaris* appears to be very closely related indeed to *Alalcomenaeus*.[3]

Distribution

Alalcomenaeus is very rare in the Walcott quarry of the Burgess Shale, so was described on the basis of half a dozen specimens. As other exposures of the Burgess Shale were unearthed, it became apparent that the creature was, in fact, a dominant member of the fauna. It has also been discovered in the Chengjiang and from Utah, giving it a long stratigraphic range.[1] Including 596 juveniles, 618 specimens of *Alalcomenaeus* are known from the Greater Phyllopod bed, where they comprise 1.2% of the community.[4]

References

1. Briggs, D.E.G.; Collins, D. (1999), "The Arthropod *Alalcomenaeus cambricus* Simonetta, from the Middle Cambrian Burgess Shale of British Columbia", *Palaeontology*, **42** (6): 953–977, doi:10.1111/1475-4983.00104 (https://doi.org/10.1111%2F1475-4983.00104)
2. Zhang, X.; Briggs, D.E.G. (2007), "The nature and significance of the appendages of *Opabinia* from the Middle Cambrian Burgess Shale", *Lethaia*, **40** (2): 161–173, doi:10.1111/j.1502-3931.2007.00013.x (https://doi.org/10.1111%2Fj.1502-3931.2007.00013.x)
3. Hendricks, J.R.; Lieberman, B.S. (2008), "New Phylogenetic Insights into the Cambrian Radiation of Arachnomorph Arthropods" (http://www.bioone.org/perlserv/?request=get-abstract), *Journal of Paleontology*, **82** (3): 585–594, doi:10.1666/07-017.1 (https://doi.org/10.1666%2F07-017.1)
4. Caron, Jean-Bernard; Jackson, Donald A. (October 2006). "Taphonomy of the Greater Phyllopod Bed community, Burgess Shale". *PALAIOS*. **21** (5): 451–65. doi:10.2110/palo.2003.P05-070R (https://doi.org/10.2110%2Fpalo.2003.P05-070R). JSTOR 20173022 (https://www.jstor.org/stable/20173022).

External links

- "*Alalcomenaeus cambricus*" (http://burgess-shale.rom.on.ca/en/fossil-gallery/view-species.php?id=18). *Burgess Shale Fossil Gallery*. Virtual Museum of Canada. 2011.
- Images (http://www.fossilmuseum.net/Fossil_Sites/Chengjiang/Alalcomenaeus/Alalcomenaeus.htm) of fossils from the Chengjiang.

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